Refrigerated Air Dryer

Series IDFB□E

For use in North, Central & South America

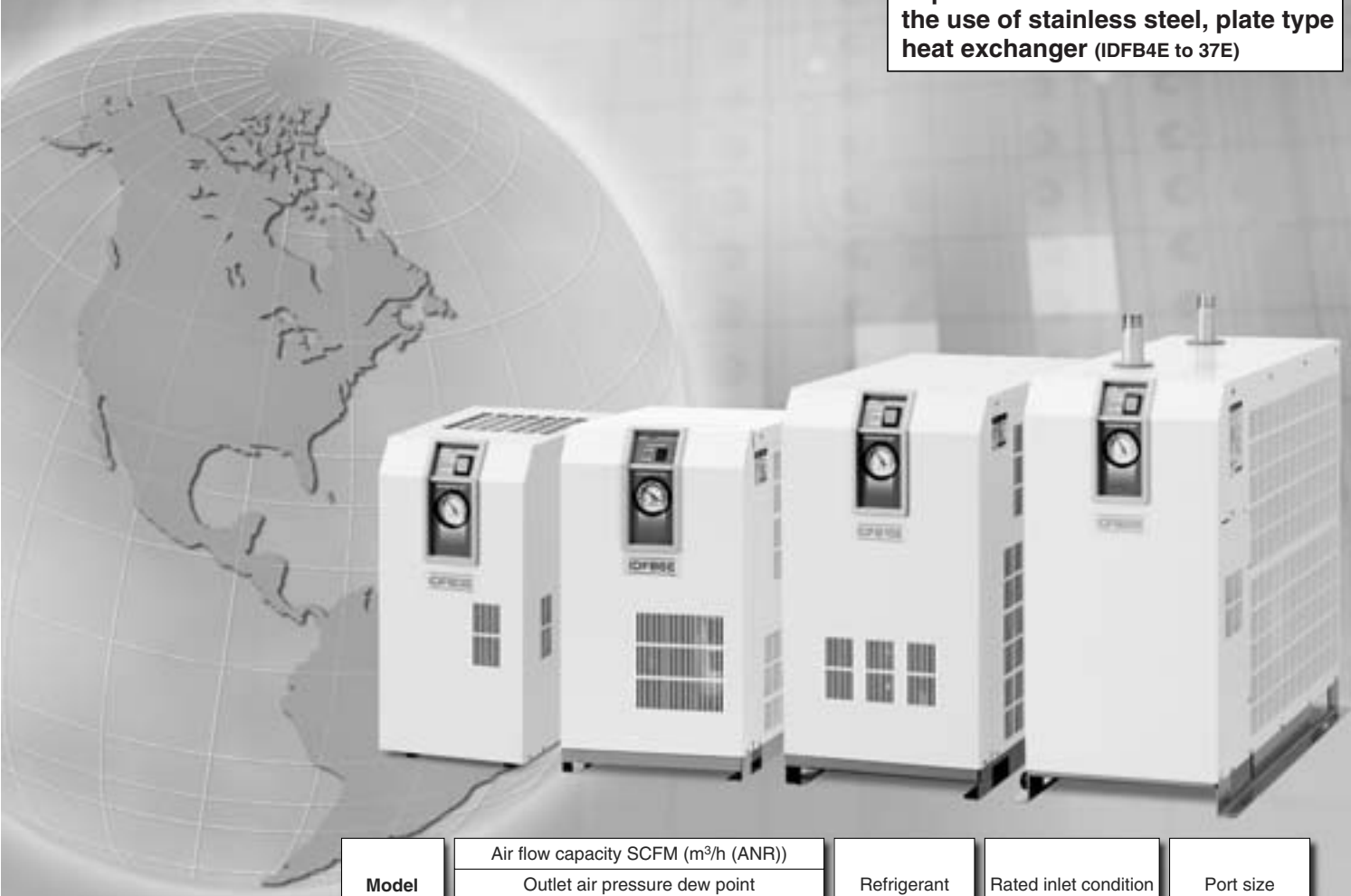
c UL us LISTED

UL certified product

Power supply voltage:
Single-phase 115 VAC (60 Hz)
230 VAC (60 Hz)

Refrigerant R134a(HFC)
Coefficient of destruction for ozone is zero.

Improved corrosion resistance with the use of stainless steel, plate type heat exchanger (IDFB4E to 37E)



Model	Air flow capacity SCFM (m³/h (ANR)) Outlet air pressure dew point			Refrigerant	Rated inlet condition	Port size
	37°F (2.8°C)	45°F (7.2°C)	50°F (10°C)			
IDFB3E	10 (17)	11 (19)	12 (20)	R134a (HFC)	100°F (37.8°C) 100 psi (0.7 MPa)	NPT 3/8
IDFB4E	15 (25)	16 (27)	17 (28)			NPT 1/2
IDFB6E	25 (43)	26 (45)	28 (47)			NPT 3/4
IDFB8E	41 (70)	43 (74)	45 (77)			
IDFB11E	59 (100)	62 (106)	65 (110)			
IDFB15E	71 (120)	80 (136)	86 (147)			NPT 1
IDFB22E	107 (182)	120 (205)	130 (221)			
IDFB37E	161 (273)	173 (294)	181 (308)			NPT 1 1/2

IDFB55E and IDFB75E are also available. Contact SMC for details.

INDEX

1. Standard Products

Series IDFB

Standard inlet air type

Rated inlet air temperature: 100°F (37.8°C)

Model	Air flow capacity SCFM (m³/h [ANR]) Outlet air pressure dew point			Refrigerant	Rated inlet condition	Port size	Page
	37°F (2.8°C)	45°F (7.2°C)	50°F (10°C)				
IDFB3E	10 (17)	11 (19)	12 (20)	R134a (HFC)	100°F (37.8°C) 100 psig (0.7 MPa)	NPT 3/8	**P. 76 to 79**
IDFB4E	15 (25)	16 (27)	17 (28)			NPT 1/2	
IDFB6E	25 (43)	26 (45)	28 (47)			NPT 3/4	
IDFB8E	41 (70)	43 (74)	45 (77)				
IDFB11E	59 (100)	62 (106)	65 (110)				
IDFB15E	71 (120)	80 (136)	86 (147)			NPT 1	
IDFB22E	107 (182)	120 (205)	130 (221)				
IDFB37E	161 (273)	173 (294)	181 (308)			NPT 1 1/2	

IDFB55E and IDFB75E are also available. Contact SMC for details.

2. Options

Optional specifications	Applicable model	Model (Suffix: Option symbol)	Page
Cool compressed air output	**IDFB3E to 11E**	**IDFB□E-11-A**	**P. 80, 81**
For medium air pressure (up to 240 psi (1.6 MPa)) (Auto drain bowl: Metal bowl with level gauge)	**IDFB6E to 37E**	**IDFB□E-□-K**	
With circuit breaker	**IDFB4E to 37E**	**IDFB□E-□-R**	
With terminal block for power supply, run & alarm signal and remote operation	**IDFB4E to 37E**	**IDFB□E-□-T**	
Timer type solenoid valve with auto drain (Suitable for medium air pressure)	**IDFB4E to 37E**	**IDFB□E-□-V**	

3. Accessory (Option)

Description	Page
Dust-protecting filter set	**P. 82**

Series IDFB□E
Model Selection

The corrected air flow capacity, which considers the user's operating conditions, is required for selecting the air dryer. Please select using the following procedures.

1 Read the correction factor.

Obtain the correction factor A to D suitable for your operating condition using the table below.

IDFB□E Selection Example

Condition		Data symbol	Correction factor Note)
Inlet air temperature	110°F (43°C)	A	0.82
Ambient temperature	105°F (40.5°C)	B	0.98
Inlet air pressure	75 psi (0.53 MPa)	C	0.95
Air consumption	14 SCFM	—	—

Note) Values obtained from the table below.

2 Calculate the corrected air flow capacity.

Obtain the corrected air flow capacity from the following formula.
Corrected air flow capacity = Air consumption ÷ (Correction factor A x B x C)

Corrected air flow capacity = 14 SCFM ÷ (0.82 x 0.98 x 0.95)
= 18 SCFM

3 Select the model.

Select the model which air flow capacity exceeds the corrected air flow capacity using the specification table. (For air flow capacity, refer to the data D below.)

According to the corrected air flow capacity of 18 SCFM, the IDFB6E will be selected because its air flow capacity at 60 Hz is 25 SCFM.

4 Option

Refer to pages 80 and 81.

5 Finalize the model number.

Refer to page 76.

6 Select accessories sold separately.

Refer to page 82.

Data A: Inlet Air Temperature

Inlet air temperature		Correction factor
°F	°C	
90	**32**	1.31
100	**37.8**	1.00
110	**43**	0.82
120	**49**	0.66

Data B: Ambient Temperature

Ambient temperature		Correction factor
°F	°C	
77	**25**	1.24
90	**32**	1.09
95	**35**	1.04
100	**37.8**	1.00
105	**40.5**	0.98
110	**43**	0.95

Data C: Inlet Air Pressure

Inlet air pressure		Correction factor
psig	MPa	
75	**0.53**	0.95
100	**0.70**	1.00
110	**0.76**	1.04
120	**0.83**	1.07
125	**0.86**	1.09
150	**1.03**	1.13
175	**1.21**	1.18
200	**1.38**	1.22
250	**1.72**	1.24

Data D: Air Flow Capacity

Model		Air flow capacity SCFM (m^3/h (ANR))							
		IDFB3E	**IDFB4E**	**IDFB6E**	**IDFB8E**	**IDFB11E**	**IDFB15E**	**IDFB22E**	**IDFB37E**
Outlet air pressure dew point	37°F (2.8°C)	10 (17)	15 (25)	25 (43)	41 (70)	59 (100)	71 (120)	107 (182)	161 (273)
	45°F (7.2°C)	11 (19)	16 (27)	26 (45)	43 (74)	62 (106)	80 (136)	120 (205)	173 (294)
	50°F (10°C)	12 (20)	17 (28)	28 (47)	45 (77)	65 (110)	86 (147)	130 (221)	181 (308)

Note) In case of "Option A (Cool compressed air output)", the air flow capacity is different. Refer to page 80 for details.

Refrigerant R134a (HFC)
Standard Inlet Air
Series IDFB□E
3E, 4E, 6E, 8E, 11E, 15E, 22E, 37E
(Inlet air temperature: 100°F [37.8°C])

How to Order

IDFB **11** E — **11** **N** — **Nil**

Size

Size
3
4
6
8
11
15
22
37

Voltage

Symbol	Voltage	Applicable size							
		3	4	6	8	11	15	22	37
11	Single-phase 115 VAC (60 Hz)	●	●	●	●	●	●	●	—
23	Single-phase 230 VAC (60 Hz)	—	—	—	—	—	—	●	●

Thread type

Size	Symbol	Thread type	Drain tube size
3 to 15	**N**	NPT (female)	3/8
	Nil	Rc (female) Note)	ø0.4 in [ø10 mm]
22, 37	**N**	NPT (Male)	3/8
	Nil	R (Male)	ø0.4 in [ø10 mm]

Note) For the models with sizes 3 to 15, an adopter for converting NPT to Rc is included if the thread symbol is "Nil".

Table of Options and Available Combinations (Size/Option)

Symbol Note 1) / Optional specifications / Size	Nil	A	K	R	T	V
	None	Cool compressed air output	For medium air pressure (Auto drain bowl: Metal case with level gauge)	With circuit breaker	With terminal block for run & alarm signal	Timer type solenoid valve with auto drain (Suitable for medium air pressure)
3	●	●	—	—	—	—
4	●	●	—	●	●	●
6	●	●	●	●	●	●
8	●	●	●	●	●	●
11	●	●	●	●	●	●
15	●	—	●	●	●	●
22	●	—	●	●	●	●
37	●	—	●	●	●	●

Note 1) Enter alphabetically when multiple options are combined.
However, the following combination cannot be achieved.
• Combination of K and V (Only one or the other may be attached.)
Note 2) Refer to pages 80 and 81 for further information on options.

Standard Specifications

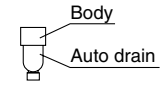
Specifications \ Model			Standard inlet air							
			IDFB3E	IDFB4E	IDFB6E	IDFB8E	IDFB11E	IDFB15E	IDFB22E	IDFB37E
Operating ranges	Fluid		Compressed air							
	Inlet air temperature	°F (°C)	41 to 122 (5 to 50)							
	Inlet air pressure	psi (MPa)	22 (0.15) to 150 (1.0)							
	Ambient temperature	°F (°C)	36 to 104 (2 to 40) Relative humidity of 85% or less							
Air flow capacity SCFM (m^3/h (ANR))	Outlet air pressure dew point	37°F (2.8°C)	10 (17)	15 (25)	25 (43)	41 (70)	59 (100)	71 (120)	107 (182)	161 (273)
	Outlet air pressure dew point	45°F (7.2°C)	11 (19)	16 (27)	26 (45)	43 (74)	62 (106)	80 (136)	120 (205)	173 (294)
	Outlet air pressure dew point	50°F (10°C)	12 (20)	17 (28)	28 (47)	45 (77)	65 (110)	86 (147)	130 (221)	181 (308)
Rated conditions	Operating pressure	psi (MPa)	100 (0.7)							
	Inlet air temperature	°F (°C)	100 (37.8)							
	Ambient temperature	°F (°C)	100 (37.8)							
Electric specifications	Power supply voltage		Single-phase 115 VAC [voltage fluctuation ±10%] 60 Hz							Single-phase 230 VAC [voltage fluctuation ±10%] 60 Hz
	Operating current	(A)	2.7	3.0	3.0	3.5	6.5	7.5	9	4.5 / 5.6
	Power consumption	(W)	240	260	260	310	550	750	1000	1270
	Applicable circuit breaker capacity	(A)	15							
Condenser			Forced air-cooled							
Refrigerant			R134a (HFC)							
Thread symbol and size	Symbol N		NPT 3/8 (female)	NPT 1/2 (female)	NPT 3/4 (female)			NPT 1 (female)	NPT 1 (Male)	NPT 1 1/2 (Male)
	Symbol Nil		Rc 3/8 (female) With Rc conversion adapter	Rc 1/2 (female) With Rc conversion adapter	Rc 3/4 (female) With Rc conversion adapter			Rc 1 (female) With Rc conversion adapter	R 1 (Male)	R 1 1/2 (Male)
Drain tube O.D.	Symbol N		3/8 inch							
	Symbol Nil		10 mm							
Coating color			White 1							
Mass		lbs (kg)	40 (18)	55 (25)	57 (26)	64 (29)	73 (33)	110 (50)	119 (54)	137 (62)
Compliant standards			UL, CSA							

Note 1) ANR is under the conditions of 68°F (20°C) at atmospheric pressure and relative humidity of 65%.
Note 2) Install a circuit breaker with a sensitivity of 30 mA.
Note 3) If this equipment suffers a short-term power outage (even if it is only momentary), it may require some time before normal operation resumes, and protective mechanisms may prevent normal operation even after the power supply has been restored.

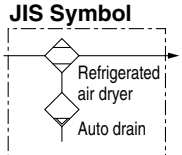
Replacement Parts

Model		IDFB3E	IDFB4E	IDFB6E	IDFB8E	IDFB11E	IDFB15E	IDFB22E	IDFB37E
Auto drain replacement part no. Note)	Thread symbol N	AD38N-Z		AD48N-Z					
	Thread symbol Nil	AD38		AD48					

Note 4) The part number for the auto drain components without including the body part. Body part replacement is impossible.



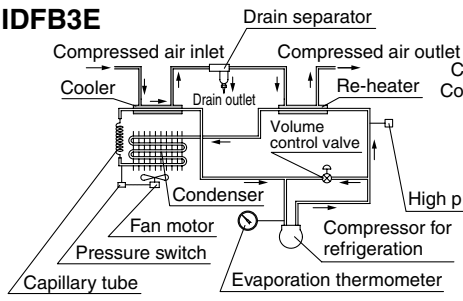
JIS Symbol



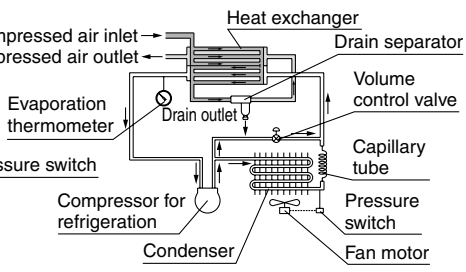
Construction Principle (Circuit for Air/Refrigerant)

Humid, hot air coming into the air dryer will be cooled down by a cooler* (heat exchanger). Water condensed at this time will be removed from the air by a drain separator (auto drain) and drained out automatically. Air separated from the water will be heated by a re-heater* (heat exchanger) to obtain the dried air, which goes through to the outlet side.
* IDFB22E/37E: Cooler reheater

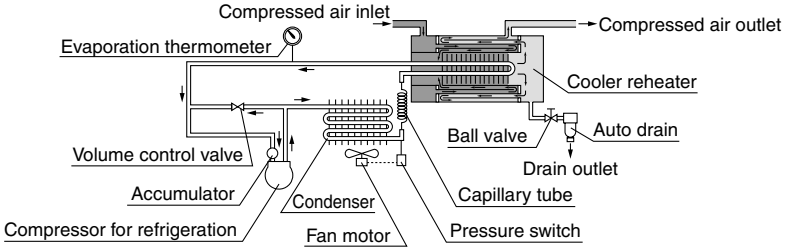
IDFB3E



IDFB4E, IDFB6E, IDFB8E, IDFB11E, IDFB15E

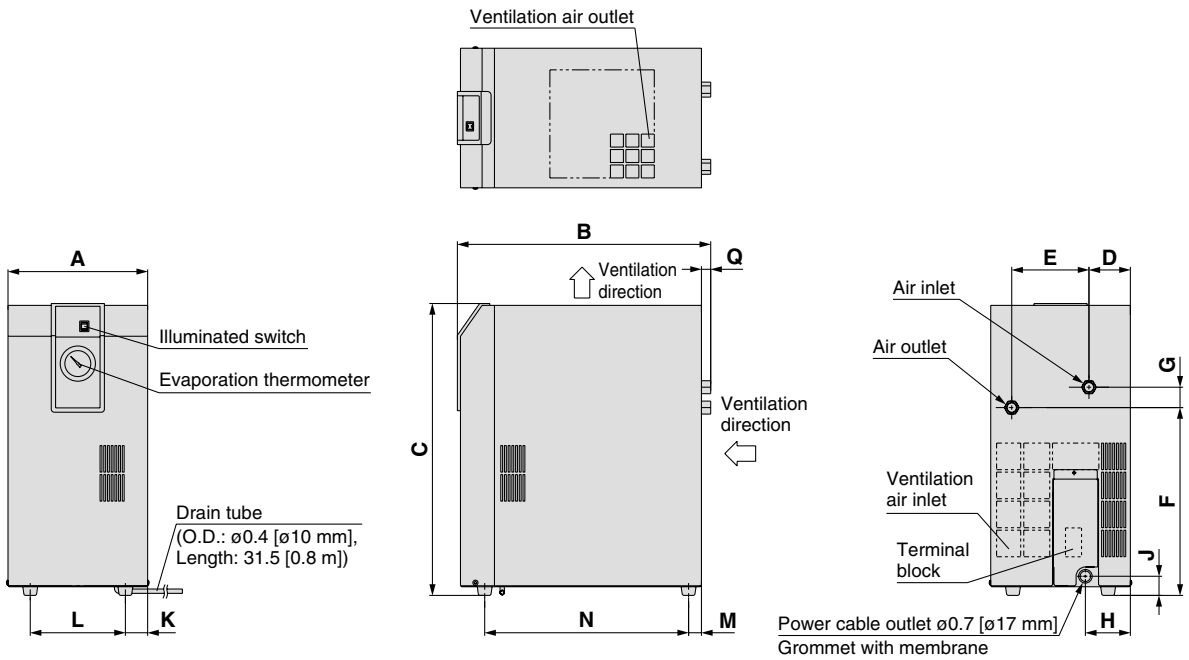


IDFB22E, IDFB37E



Dimensions

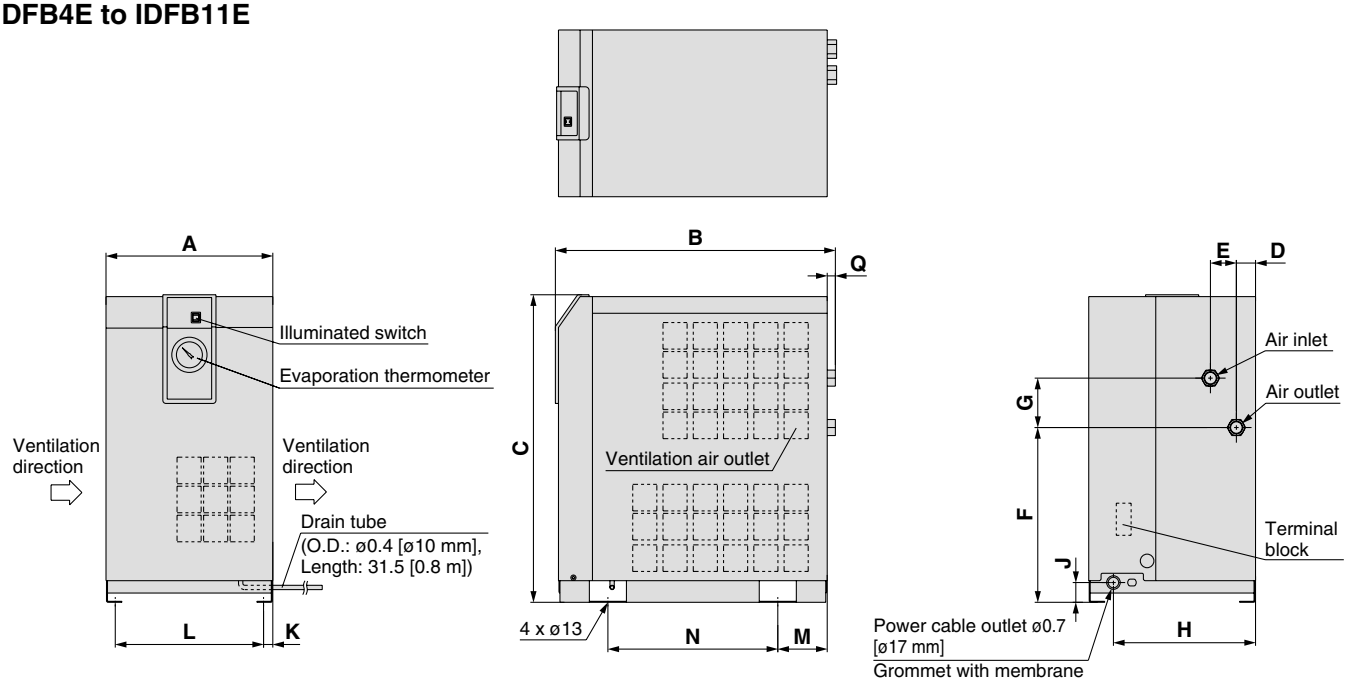
IDFB3E



Dimensions Unit: inch [mm]

Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	Q
IDFB3E	3/8	8.9 [226]	16.1 [410]	18.6 [473]	2.6 [67]	4.9 [125]	12.0 [304]	1.3 [33]	2.9 [73]	1.2 [31]	1.4 [36]	6.1 [154]	0.8 [21]	13.0 [330]	0.6 [15]

IDFB4E to IDFB11E

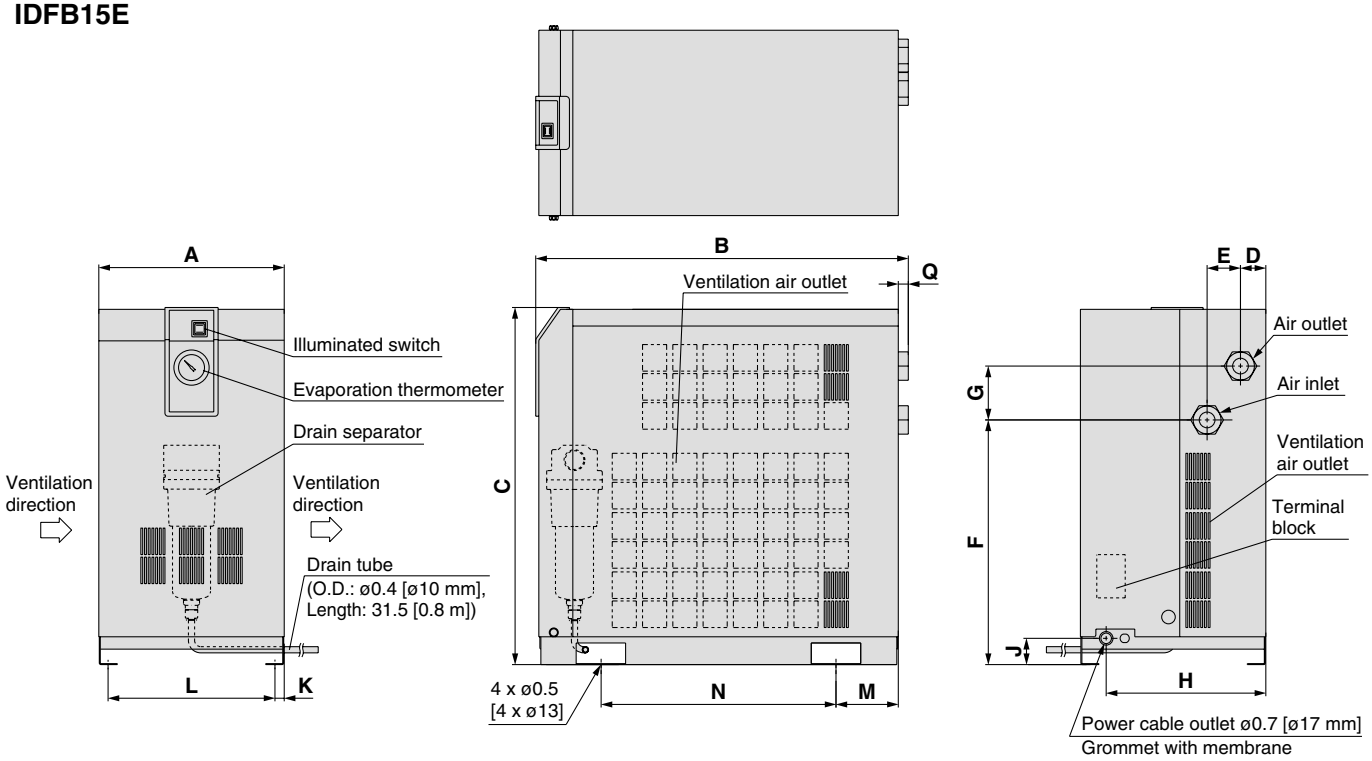


Dimensions Unit: inch [mm]

Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	Q
IDFB4E	1/2	10.6 [270]	17.8 [453]	19.6 [498]	1.2 [31]	1.7 [42]	11.1 [283]	3.1 [80]	9.1 [230]	1.3 [32]	0.6 [15]	9.4 [240]	3.1 [80]	10.8 [275]	0.5 [13]
IDFB6E	3/4		17.9 [455]												
IDFB8E			19.1 [485]	22.4 [568]			14 [355]							11.8 [300]	
IDFB11E															

Dimensions

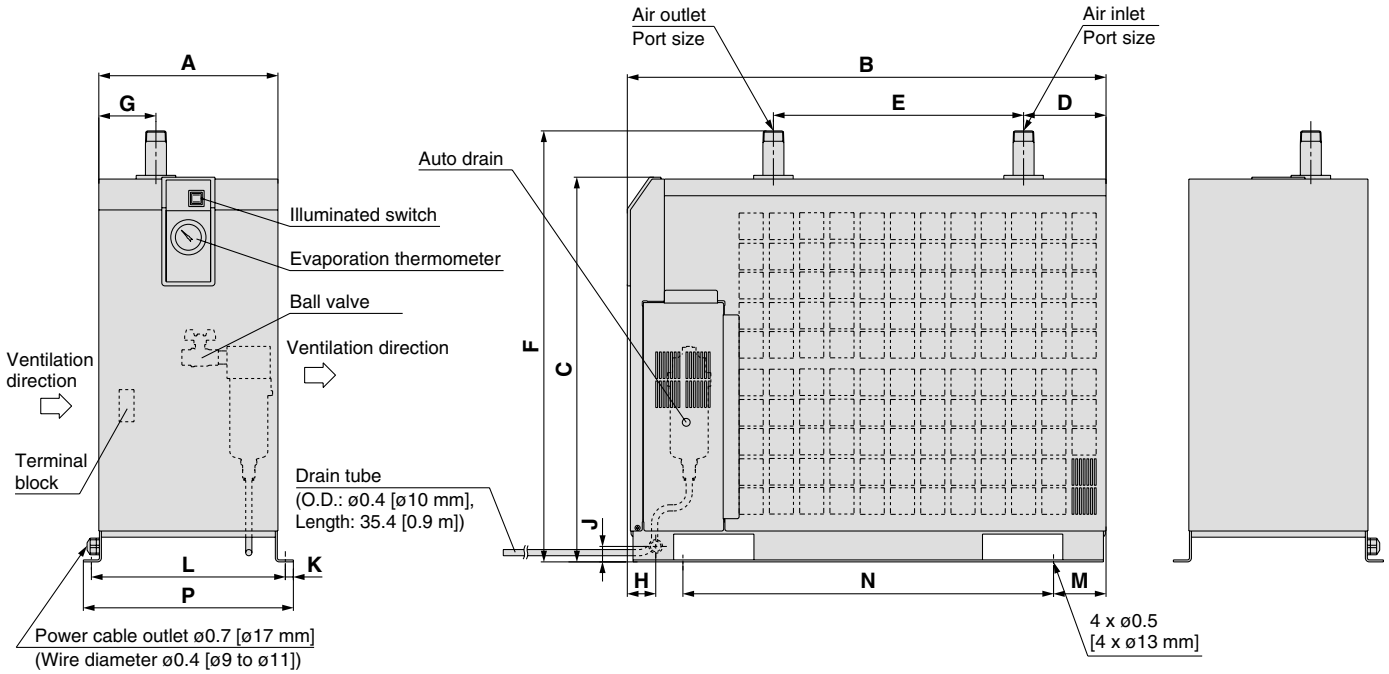
IDFB15E



Dimensions Unit: inch [mm]

Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	Q
IDFB15E	1	11.8 [300]	23.7 [603]	22.8 [578]	1.6 [41]	2.1 [54]	16.6 [396]	3.4 [87]	10.2 [258]	1.7 [43]	0.6 [15]	10.6 [270]	4.0 [101]	15.0 [380]	0.6 [16]

IDFB22E, IDFB37E



Dimensions Unit: inch [mm]

Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	P
IDFB22E	1	11.4 [290]	30.5 [775]	24.5 [623]	5.3 [134]	15.9 [405]	27.5 [698]	3.7 [93]	1.8 [46]	1.0 [25]	0.5 [13]	12.4 [314]	3.3 [85]	23.6 [600]	13.4 [340]
IDFB37E	1 1/2		33.7 [855]											26.8 [680]	

Series IDFB□E
Optional Specifications 1

Refer to "How to Order" page 76 for optional models.

A Option symbol: Cool compressed air output — IDFB3E to 11E

There is no heating of cooled, dehumidified air as it leaves the air dryer. The air flow capacity with this option is smaller than that of the standard dryer. (The external dimensions are identical with the standard product.)
Note) Perform thermal insulation treatment for pipings and equipment installed after the dryer to prevent the formation of condensation.

Air Flow Capacity

Model	IDFB3E	IDFB4E	IDFB6E	IDFB8E	IDFB11E
Air flow capacity (ANR)	5 SCFM (8 m^3/h)	13 SCFM (23 m^3/h)	17 SCFM (29 m^3/h)	19 SCFM (32 m^3/h)	23 SCFM (39 m^3/h)

Conditions: Inlet air pressure: 100 psi (0.7 MPa), Inlet air temperature: 100°F (37.8°C), Outlet air temperature: 50°F (10°C), Ambient temperature: 100°F (37.8°C)

K Option symbol: For medium air pressure (Auto drain bowl: Metal bowl with level gauge) — IDFB6E to 37E

The auto drain is changed from the standard one to one with a medium pressure specification.
A metal bowl with a level gauge which can confirm the water level is used for the auto drain.

Specifications

1. Maximum operating pressure: 240 psi (1.6 MPa)
2. Dimensions ··· same as standard products

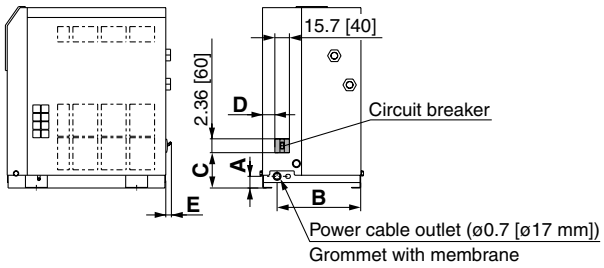
Replacement Parts

Model	Auto drain assembly part no.	Note
IDFB6E to 15E-11N	IDF-S0201	The AD48-8Z-X2110 auto drain, insulator, and one-touch fitting are included.
IDFB22E, 37E-□N	AD48-8Z-X2110	One-touch fitting (KQ2H11-02S) is not included.
IDFB6E to 15E-11	IDF-S0086	The AD48-8-X2110 auto drain, insulator, and one-touch fitting are included.
IDFB22E, 37E-□	AD48-8-X2110	One-touch fitting (KQ2H10-02S) is not included.

R Option symbol: With circuit breaker — IDFB4E to 37E

A circuit breaker with cover is attached to the side of the air dryer. This saves additional electrical wiring at the time of installation.

IDFB4E to 15E

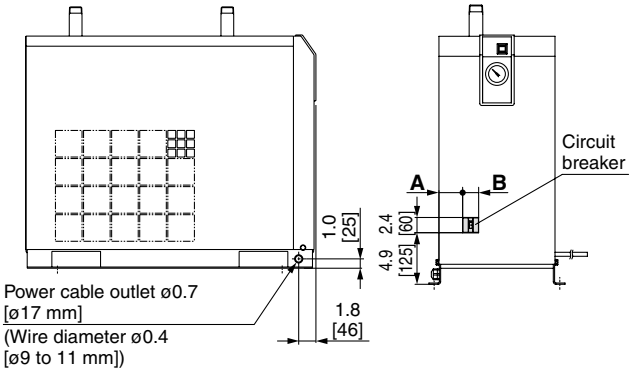


Dimensions

Unit: inch [mm]

Model	A	B	C	D	E
IDFB4E, 6E, 8E, 11E	1.3 [32]	9.0 [230]	3.8 [97]	1.3 [34]	0.6 [15]
IDFB15E	1.7 [43]	10.2 [258]	4.0 [102]	3.2 [82]	—

IDFB22E, 37E



Dimensions

Unit: inch [mm]

Model	A	B
IDFB22E-□	2.3 [59]	1.6 [40]
IDFB37E-23		

Breaker Capacity and Sensitivity Current

Model	Breaker capacity	Sensitivity current
IDFB4E to 37E	15 A	30 mA

Optional Specifications 2

Refer to "How to Order" page 76 for optional models.

T Option symbol

With terminal block for power supply, run & alarm signal and remote operation

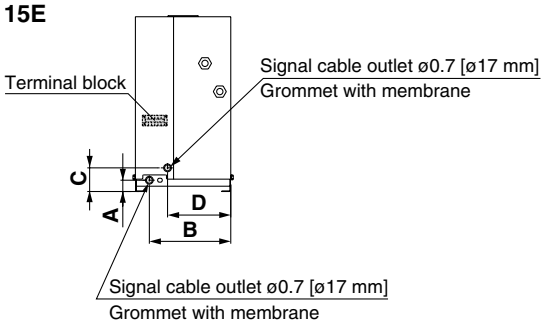
IDFB4E to 37E

In addition to the terminals for the power supply, terminals for the operating signal and the error signal are also available. (No-voltage contact)
Also, in case of remote control, operate it from the power supply side while the air dryer switch remains ON.

Contact capacity: 230 VAC, 4 A 24 VDC, 5 A for operating and error signals.
Minimum current value: 20 V, 5 mA (AC/DC) for operating and error signals.

Note) Please be sure to confirm the electric circuits with the drawings or instruction manual before using the input/output signals.

IDFB4E to 15E

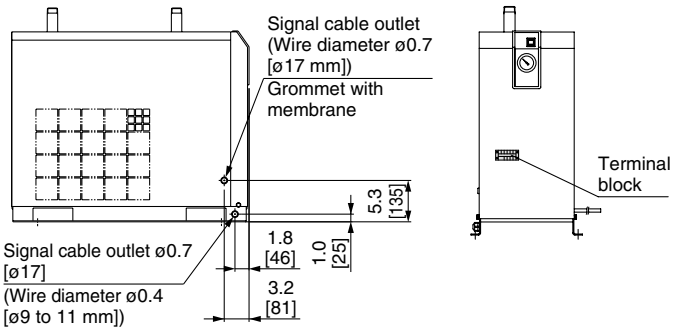


Dimensions

Unit: inch [mm]

Model	A	B	C	D
IDFB4E, 6E, 8E, 11E	1.3 [32]	9.0 [230]	2.6 [67]	7.0 [179]
IDFB15E	1.7 [43]	10.2 [258]	3.0 [77]	6.2 [158]

IDFB22E, 37E



V Option symbol

Timer type solenoid valve with auto drain (Suitable for medium air pressure)

IDFB4E to 37E

Drainage is discharged by controlling a solenoid valve with a timer.
A strainer for solenoid valve protection and stop valve are also included.
(The external dimensions are identical with the standard product.)

Maximum operating pressure: 240 psi (1.6 MPa)

∗ The timer type solenoid valve actuates once (for 0.5 seconds) every 30 seconds.

Replacement Parts

Model	Part no.	Note
IDFB4E to 22E-11□	IDF-S0199	115 VAC
IDFB22E, 37E-23□	IDF-S0198	230 VAC

Accessory (Option)

	Features	Specifications	Applicable dryer
Dust-protecting filter set	Prevents a decline in the performance of the air dryer, even in a dusty atmosphere.	Max. ambient temperature 40°C	IDFB3E to 37E

How to Order

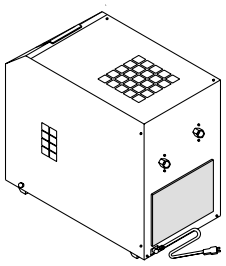
Dust-protecting filter set

IDF — FL 209

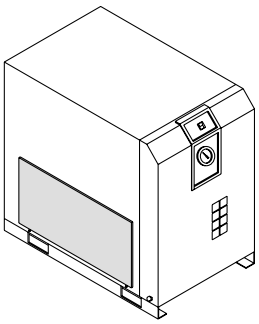
Applicable dryer

Symbol	Applicable dryer
209	IDFB3E
203	IDFB4E IDFB6E
204	IDFB8E
205	IDFB11E
206	IDFB15E
208	IDFB22E IDFB37E

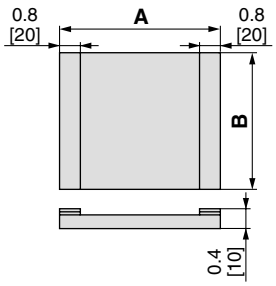
Dust-protecting Filter Set/Dimensions



(IDF-FL209)



(IDF-FL203 to 208)



Dimensions Unit: inch [mm]

Part no.	Applicable dryer	A	B	Mass lb [g]
IDF-FL209	IDFB3E	8.7 [220]	9.4 [240]	0.08 [35]
IDF-FL203	IDFB4E	14.8 [375]	7.7 [195]	0.12 [55]
	IDFB6E			
IDF-FL204	IDFB8E	13.3 [340]	14.3 [265]	0.15 [70]
IDF-FL205	IDFB11E	14.8 [375]		0.17 [75]
IDF-FL206	IDFB15E	12.2 [310]	10.6 [270]	0.15 [70]
IDF-FL208	IDFB22E	21.7 [550]	14.4 [365]	0.31 [140]
	IDFB37E			

Series IDFB□E
Specific Product Precautions 1

Be sure to read before handling. Refer to front matters 42 and 43 for Safety Instructions and pages 6 to 8 for Air Preparation Equipment Precautions.

Installation

⚠ Caution

- Avoid locations where the air dryer will be in direct contact with wind and rain. (Avoid locations where relative humidity is greater than 85%.)
- Avoid exposure to direct sunlight.
- Avoid locations that contain much dust, corrosive gases, or flammable gases. Failure due to corrosion is not covered under warranty.
- Avoid locations of poor ventilation and high temperature.
- Allow ample space around the air dryer.
- Avoid locations where a dryer could draw in high temperature air that is discharged from an air compressor or other dryer.
- Avoid locations subjected to vibration.
- Avoid possible locations where the drain can freeze.
- Use the air dryer with an ambient temperature lower than 104°F (40°C).
- Avoid installation on machines for transporting, such as trucks, ships, etc.

Drain Tube

⚠ Caution

- A polyurethane tube is attached as a drain tube for the IDFB3E to 37E. Use this tube to discharge drainage.
- Do not use the drain tube in an upward direction. Do not bend or crush the drain tube. (The auto drain will not be activated and water will try to escape via the air outlet.)

Power Supply

⚠ Caution

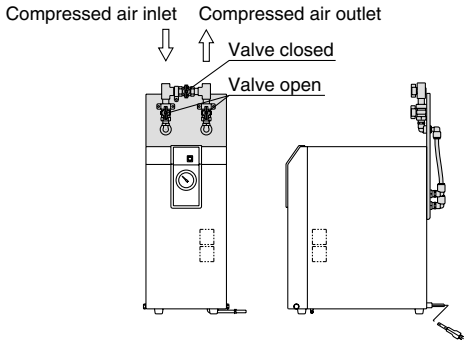
- Connect the power supply to the terminal block.
- Install a suitable circuit breaker applicable for the specific model.
- The voltage fluctuation should be maintained within ±10% of the rated voltage.

Air Piping

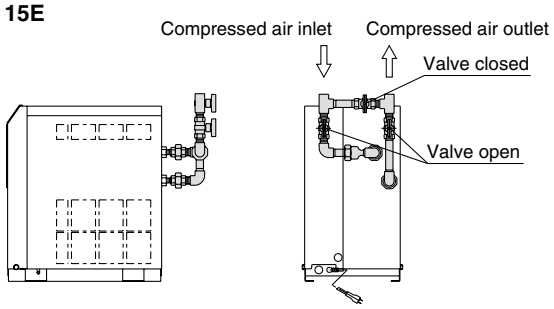
⚠ Caution

- Be careful to avoid an error in connecting the air piping at the compressed air inlet (IN) and outlet (OUT).
- Install by-pass piping since it is needed for maintenance.

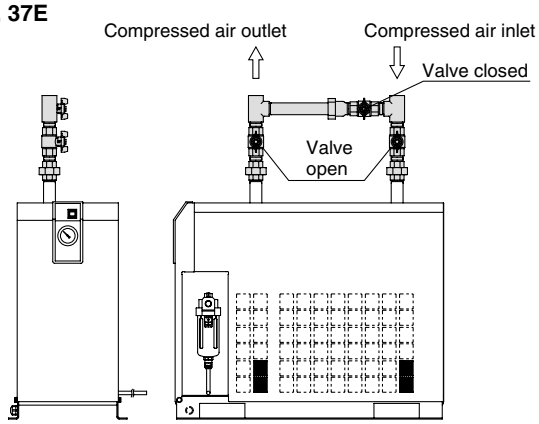
IDFB3E



IDFB4E to 15E



IDFB22E, 37E



- When tightening piping at the air inlet/outlet tube, the hexagonal parts of the port on the air dryer side or piping should be held firmly with a spanner or adjustable angle wrench.
- Variations in operating conditions may cause condensation to form at the surface of the outlet piping. Apply thermal insulation around the piping to prevent condensation from forming.
- Vibration resulting from the compressor should not be transmitted through air piping to the air dryer.
- Do not allow the weight of the piping to lie directly on the air dryer.

Series IDFB□E
Specific Product Precautions 2

Be sure to read before handling. Refer to front matters 42 and 43 for Safety Instructions and pages 6 to 8 for Air Preparation Equipment Precautions.

Protection Circuit

⚠ Caution

When the air dryer is operated under the following stated conditions, a protection circuit is activated, the light turns off and operation stops.

- When the compressed air temperature is too high.
- When the compressed air flow rate is too high.
- When the ambient temperature is too high. (104°F (40°C) or higher)
- When the fluctuation of the power supply is beyond the rated voltage ±10%.
- When the dryer is drawing in high temperature air that is discharged from an air compressor or other dryer.
- The ventilation port is obstructed by a wall or clogged with dust.

Compressor Air Delivery

⚠ Caution

Use the air compressor with an air delivery of 3.5 SCFM (6 m^3/h) or larger for the IDFB3E to 37E series.

Since the auto drain of the IDFB3E to 37E series is designed in such a way that the valve remains open unless the air pressure rises to 22 psi (15 MPa) or higher, air will blow out from the drain discharge port when the air compressor starts up until the pressure increases. Therefore, if the air compressor has a small air delivery, the pressure may not be sufficient.

Auto Drain

⚠ Caution

The auto drain may not function properly, depending on the quality of the compressed air. Check the operation once a day.

Cleaning of Ventilation Area

⚠ Caution

Remove dust from the ventilation area once a month using a vacuum cleaner or an air blow nozzle.

Time Delay for Restarting

⚠ Caution

Allow at least three minutes before restarting the dryer. If the air dryer is restarted within three minutes after being stopped, the protection circuit will be activated, operating light will turn off and the dryer will not be activated.